



Bone mass and the risk of breast cancer among postmenopausal women

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Abstract: **BACKGROUND:** Recent studies have shown a direct relation between serum estrogen levels assessed at a single point in time and the risk of breast cancer, but no evidence links estrogen levels assessed repeatedly over an extended interval to the risk of breast cancer. Bone mass has been proposed as a marker of cumulative exposure to estrogen in women. We therefore studied the association between bone mass and the incidence of breast cancer. **METHODS:** Between 1967 and 1970, 1373 women who were 47 to 80 years old and had no history of breast cancer underwent posteroanterior hand radiography in the Framingham Study. We used radiogrametry to measure the cortical width of each woman's second metacarpal. Participants were followed until the end of 1993. All incident cases of breast cancer were confirmed by pathological reports. We used a Cox proportional-hazards model to examine the relation of metacarpal bone mass to the risk of postmenopausal breast cancer. **RESULTS:** Postmenopausal breast cancer developed in 91 subjects. Incidence rates per 1000 person-years increased from 2.0 among the women in the lowest age-specific quartile of metacarpal bone mass to 2.6, 2.7, and 7.0 among the women in the second, third, and highest quartiles, respectively. After adjustments for age and other potential confounding factors, the rate ratios for the risk of breast cancer were 1.0, 1.3, 1.3, and 3.5 from the lowest quartile to the highest (P for trend, <0.001). **CONCLUSIONS:** Women in the highest quartile of bone mass are at higher risk for postmenopausal breast cancer than those in the lowest quartile. The mechanisms underlying this relation are not understood, but cumulative exposure to estrogen may play a part.